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W33
no. 44

UNITED STATES NAVAL OBSERVATORY
CIRCULAR NO. 44

U. S. Naval Observatory, Washington 25, D. C.

July 24, 1953

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS

MARCH-APRIL-MAY, 1953

By Winifred Sawtell

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.

No., the identifying number of the group assigned by Mt. Wilson.

Δl , the heliographic difference in longitude from the central meridian, measured positive to the west.

φ , the heliographic latitude, measured positive to the north.

ρ , the heliocentric angular distance from the line joining the centers of the Earth and Sun.

A , the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.

s , the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by M. The plate quality, which follows, is indicated by:

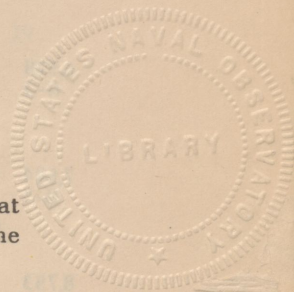
1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g .
2. The longitude of the central meridian, L_0 .
3. The latitude of the center of the disc, B_0 .
4. The total value of A .
5. The total value of s .

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.



MARCH

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
1,684 N-3		°	°	°	0	0	13,619 N-2	11093	+55	+ 4	56	24	1
	(0) (73)		(-7)		0	0		(1) (275)		(-7)		24	1
2,760 M-3					0	0	14,594 N-3	11094	-13	-10	13	6	1
	(0) (58)		(-7)		0	0		11094	-12	-12	13	24	2
3,712 M-3					0	0		(1) (262)		(-7)		30	3
	(0) (46)		(-7)		0	0	15,617 M-2				0	0	
4,715 M-3	11090	+12	- 6	13	12	1		(0) (249)		(-7)		0	0
	11090	+12	- 8	13	24	3	16,638 N-3				0	0	
	(1) (33)		(-7)		36	4		(0) (236)		(-7)		0	0
5,635 N-2					0	0	17,615 N-4				0	0	
	(0) (21)		(-7)		0	0		(0) (223)		(-7)		0	0
6,578 N-3					0	0	18,688 M-3	11095	-88	-15	88	48	1
	(0) (8)		(-7)		0	0		11095	-79	-15	79	145	1
7,584 N-3					0	0		(1) (208)		(-7)		193	2
	(0) (355)		(-7)		0	0	19,618 N-4	11095	-70	-16	72	6	1
8,753 N-3					0	0		11095	-69	-16	68	6	1
	(0) (339)		(-7)		0	0		11095	-66	-17	65	6	1
9,620 N-3					0	0		11095	-66	-15	65	6	1
	(0) (328)		(-7)		0	0		11095	-65	-16	64	85	1
10,666 N-2					0	0		(*)	+16	+ 2	19	6	1
	(0) (314)		(-7)		0	0		(2) (196)		(-7)		115	6
11,592 N-3					0	0	20,600 N-4	11095	-51	-16	51	48	1
	(0) (302)		(-7)		0	0		(1) (183)		(-7)		48	1
					0	0	21,721 M-3	11095	-36	-16	36	97	3
					0	0		11095	-34	-17	35	6	2
					0	0		(1) (168)		(-7)		103	5
					0	0	22,753 N-3	11095	-23	-15	25	64	1
					0	0		(1) (155)		(-7)		64	1
					0	0	23,662	11095	- 9	-15	13	36	2

MARCH

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
M-3							11097	+ 5	+13		21	12	3
	(1) (143)	(-7)			36	2	(3) (77)	(-7)				230	7
24.692	11095	+ 3	-15	9	48	2	30.620	11100	-68	- 1	68	291	2
N-3							N-4	11100	-63	- 1	63	61	1
	(1) (129)	(-7)			48	2		11099	-42	- 9	42	48	4
25.664	11095	+15	-15	17	36	1		11098	-35	+10	38	6	2
M-1								11098	-34	+11	38	97	3
	(1) (116)	(-7)			36	1		11097	+34	+14	41	24	2
26.719					0	0		11097	+36	+14	42	36	2
N-4							(4) (51)	(-7)				563	16
	(0) (103)	(-7)			0	0	31.585	11100	-58	- 2	58	12	3
27.608	11099	-88	- 7	88	24	1	N-5	11100	-56	- 1	56	339	2
M-3	11098	-76	+11	77	145	1		11100	-54	- 3	54	61	5
	(*)	-28	+ 3	31	6	1		11100	-51	0	52	12	1
	11097	- 7	+13	21	12	2		11100	-50	- 1	51	48	2
	11097	- 5	+12	20	16	2		11099	-28	- 9	28	24	2
	(4) (91)	(-7)			203	7		11098	-20	+11	27	61	2
28.637	11099	-71	- 9	72	48	2		11097	+44	+17	50	36	1
N-3	11098	-62	+ 9	64	170	2		11097	+48	+15	53	24	1
							(4) (37)	(-7)				617	19

Mean for 29 days
 $A=81$, $r=12.0$

APRIL

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
1.680	11100	-43	+1	44	48	1							
N-3	11100	-41	+1	43	267	3		11098	+34	+12	38	12	1
	11100	-41	+3	44	12	3		(6)	(346)	(-6)		563	27
	11100	-36	+2	38	24	1	5.683	11101	+4	+3	11	12	2
	11100	-35	+1	36	36	2	N-1	11101	+6	+4	13	36	1
	11100	-34	0	35	48	2		11100	+12	+2	15	145	1
	11099	-21	-9	22	36	1		11102	+17	+4	20	61	2
	11098	-7	+11	18	24	1		11102	+18	+3	21	36	1
	11098	-4	+11	17	61	3		11102	+19	+4	22	121	4
	(3)	(24)	(-6)		556	17		11098	+53	+9	56	12	1
2.587	11100	-31	0	32	48	3		(4)	(331)	(-6)		423	12
N-5	11100	-29	+1	31	267	2	6.685	11101	+16	+4	19	12	2
	11100	-27	-1	28	16	1	M-3	11101	+17	+5	22	12	2
	11100	-27	+2	29	36	1		11101	+19	+4	23	12	2
	11100	-26	+2	27	36	1		11101	+20	+4	23	6	1
	11100	-24	+1	25	48	8		11100	+24	+2	26	121	1
	11099	-11	-9	12	24	2		11102	+31	+4	33	6	1
	11099	-10	-8	10	12	3		11102	+32	+4	34	36	2
	11099	-8	-8	9	12	3		11102	+33	+2	34	16	1
	11099	-7	-8	8	48	2		11102	+33	+4	35	12	1
	11098	+6	+12	19	12	1		11102	+33	+5	35	16	2
	(3)	(12)	(-6)		559	27		(3)	(318)	(-6)		249	15
3.590	11101	-24	+3	26	12	1	7.685	11101	+29	+3	31	73	8
N-3	11101	-22	+4	25	36	1	M-3	11101	+32	+3	33	6	1
	11100	-16	+1	18	230	1		11101	+34	+3	35	48	6
	11100	-15	+2	17	36	1		11100	+38	+2	40	121	1
	11102	-12	+3	15	6	2		11102	+43	+5	45	32	2
	11102	-11	+3	15	48	4		11102	+44	+3	45	24	2
	11102	-11	0	13	48	3		11102	+45	+3	46	12	1
	11102	-9	+2	13	61	1		11102	+49	+6	52	12	1
	11099	+3	-9	5	16	2		11102	+51	+4	53	16	1
	11099	+7	-8	8	36	3		11104	+57	-8	57	24	2
	11098	+21	+12	27	12	2		11104	+58	-9	58	24	3
	(5)	(359)	(-6)		541	21		(4)	(305)	(-6)		392	28
4.582	11101	-10	+4	15	12	2	8.671	11101	+43	+4	45	121	1
N-3	11101	-9	+4	14	16	1	N-1	11101	+44	+4	46	24	1
	11101	-8	+5	14	24	3		11101	+48	+4	51	206	3
	11100	-4	+1	8	194	2		11100	+52	+2	53	121	1
	11100	-3	-1	6	12	1		(2)	(292)	(-6)		472	6
	11102	+2	+5	12	48	1	9.657	11101	+56	+4	57	109	1
	11102	+3	+4	12	48	3	N-1	11101	+59	+5	62	48	2
	11102	+4	+3	11	36	4		11101	+63	+5	65	194	1
	11102	+4	+2	9	36	2		11100	+66	+3	68	97	1
	11102	+4	+6	13	12	1		(2)	(279)	(-6)		448	5
	11102	+5	+3	11	16	2							
	11102	+5	+6	14	73	2							
	11099	+22	-8	22	12	1							
	11103	+26	+13	33	12	1							

APRIL

U. T.	No.	Δl	φ	ρ	A	s	U. T.	No.	Δl	φ	ρ	A	s
10,667	11101	+69	+ 4	71	97	2	21,599	11107	-88	+12	88	145	1
N-3	11101	+76	+ 5	77	267	3	N-3						
	11100	+78	+ 3	80	97	1		(1) (121)	(-5)			145	1
	(2) (265)	(-6)			461	6	22,594	11107	-78	+10	78	242	1
11,669	11101	+88	+ 2	88	291	1	N-4						
N-2								(1) (108)	(-5)			242	1
	(1) (252)	(-6)			291	1	23,587	11109	-80	-10	80	48	1
12,728					0	0	N-4	11107	-70	+ 9	72	145	3
M-3								11107	-66	+ 8	68	73	2
	(0) (238)	(-6)			0	0		11107	-65	+ 9	66	291	1
13,730					0	0		11107	-62	+ 9	64	339	1
M-3								(2) (95)	(-5)			896	8
	(0) (225)	(-6)			0	0	24,641	11110	-78	- 8	78	32	1
14,598					0	0	N-3	11109	-69	- 8	69	48	2
N-4								11107	-58	+10	61	24	1
	(0) (213)	(-6)			0	0		11107	-55	+10	57	121	4
15,573					0	0		11107	-52	+ 9	54	73	2
N-4								11107	-49	+10	52	218	3
	(0) (201)	(-6)			0	0		11107	-47	+11	50	485	3
16,802					0	0		(3) (81)	(-5)			1001	16
N-3							25,657	11110	-66	- 8	67	24	1
	(0) (184)	(-5)			0	0	N-5	11109	-55	- 8	55	32	2
17,589					0	0		11108	-53	- 5	53	16	1
N-3								11108	-51	- 5	51	12	1
	(0) (174)	(-5)			0	0		11107	-42	+10	45	12	1
18,608	11106	-52	+ 8	54	6	4		11107	-41	+11	45	36	2
M-4								11107	-40	+10	43	6	1
	(1) (160)	(-5)			6	4		11107	-40	+11	44	24	1
19,682					0	0		11107	-37	+11	42	16	1
N-2								11107	-36	+10	39	97	3
	(0) (146)	(-5)			0	0		11107	-35	+11	38	73	1
20,594					0	0		11107	-34	+11	38	61	2
N-1								11107	-32	+12	36	388	1
	(0) (134)	(-5)			0	0		(4) (67)	(-5)			797	18
							26,685	11111	-72	+ 4	71	194	1
							N-1	11109	-41	- 9	42	48	2
								11107	-26	+11	31	48	1
								11107	-25	+10	29	61	1
								11107	-22	+10	26	97	3
								11107	-21	+11	26	121	2
								11107	-18	+11	24	364	1
								(3) (54)	(-5)			933	11
							27,582	11111	-60	+ 2	61	194	1

APRIL

U. T.	No.	Δl	φ	ρ	A	s	U. T.	No.	Δl	φ	ρ	A	s	
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$			
N-5	11110	-40	-10	41	6	1		11107	+ 7	+13	18	485	1	
	11109	-28	-10	29	6	1								
	11109	-27	- 9	28	6	1		(2)	(29)	(-4)		1402	21	
	11108	-18	- 6	18	6	1								
	11108	-17	- 7	18	6	1		29.580	11111	-34	+ 3	35	194	1
	11107	-17	+13	24	6	1	N-3	11107	+13	+13	21	170	7	
	11107	-15	+11	22	48	3		11107	+13	+11	20	194	8	
	11107	-15	+13	23	61	5		11107	+14	+13	23	97	2	
	11107	-14	+10	20	97	5		11107	+15	+11	22	48	1	
	11107	-13	+12	21	145	3		11107	+16	+12	23	145	1	
	11107	-12	+13	20	48	1		11107	+19	+13	21	533	2	
	11107	-12	+10	18	73	2								
	11107	-11	+14	21	16	1		(2)	(16)	(-4)		1381	22	
	11107	- 9	+11	17	242	1								
	11107	- 8	+14	20	12	1		30.762	11111	-16	+ 5	18	194	1
	11107	- 7	+12	17	388	3		N-3	11107	+31	+12	34	194	3
	(5)	(42)	(-4)		1360	32			11107	+31	+ 9	33	24	1
									11107	+32	+10	35	267	6
									11107	+33	+12	36	36	1
28.592	11111	-50	+ 2	51	12	1			11107	+33	+10	35	48	2
N-4	11111	-47	+ 2	48	194	4			11107	+34	+12	37	48	2
	11107	- 2	+10	14	16	1			11107	+34	+ 9	36	97	3
	11107	- 1	+11	15	194	5			11107	+35	+10	38	73	1
	11107	- 1	+14	18	48	1			11107	+36	+ 9	39	12	2
	11107	0	+13	17	170	1			11107	+37	+10	40	582	3
	11107	+ 2	+14	18	97	3								
	11107	+ 3	+10	14	16	2			(2)	((0)	(-4)		1575	25
	11107	+ 4	+12	16	170	2								

Mean for 30 days, $A=490$, $r=31.1$

MAY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
1.570	11111	-6	+4	10	170	1	9.554					0	0
N-4	11107	+39	+16	44	85	1	N-3						
	11107	+40	+14	44	121	3		(0) (243)	(-3)			0	0
	11107	+41	+13	45	206	4	10.651					0	0
	11107	+42	+12	45	36	1	M-2						
	11107	+42	+15	46	32	2		(0) (229)	(-3)			0	0
	11107	+43	+15	47	48	1	11.598					0	0
	11107	+44	+12	47	48	1	N-3						
	11107	+45	+13	48	36	1		(0) (217)	(-3)			0	0
	11107	+47	+14	50	582	1	12.585					0	0
	(2) (349)	(-4)			1364	16	N-2						
2.651	11113	-43	+2	43	16	1		(0) (204)	(-3)			0	0
N-3	11111	+9	+5	13	158	1	13.552					0	0
	(*)	+23	-9	24	6	1	N-4						
	11107	+54	+15	56	36	1		(0) (191)	(-3)			0	0
	11107	+56	+13	58	218	1	14.661					0	0
	11107	+58	+13	61	48	1	M-2						
	11107	+62	+14	64	533	1		(0) (176)	(-3)			0	0
	(4) (335)	(-4)			1015	7	15.637					0	0
3.650	11111	+23	+5	25	170	1	N-3						
N-3	11107	+69	+13	71	145	1		(0) (163)	(-3)			0	0
	11107	+70	+13	72	145	2	17.597	11117	+42	+12	44	16	2
	11107	+76	+13	76	776	1	N-4	11117	+44	+13	46	24	1
	(2) (322)	(-4)			1236	5		(1) (137)	(-2)			40	3
4.674	11111	+36	+4	37	85	1	18.643	11117	+58	+12	60	6	1
M-2							N-4						
	(1) (308)	(-4)			85	1		(1) (123)	(-2)			6	1
5.742	11111	+51	+3	51	85	1	19.586	11118	-78	+13	78	170	2
N-3	(*)	+65	+4	66	6	1	M-3	11118	-77	+12	77	121	3
	(2) (294)	(-4)			91	2		(1) (111)	(-2)			291	5
6.605	11111	+61	+5	62	121	1	20.542	11118	-63	+8	64	182	1
N-3							N-3	11118	-61	+7	62	85	1
	(1) (283)	(-4)			121	1		(1) (98)	(-2)			267	2
7.578	11111	+75	+4	75	97	1							
M-3													
	(1) (270)	(-3)			97	1							
8.581					0	0							
N-3													
	(0) (257)	(-3)			0	0							

MAY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
21,589	11118	-48	+9	50	145	1		11118	+33	+15	36	48	3
N-3	11118	-46	+8	47	73	2		(1)	(6)	(-1)		181	6
	(1)	(85)	(-2)		218	3	28,542	11119	-21	-6	22	16	1
22,787	11118	-31	+12	34	97	1	N-4	11119	-20	-5	21	6	2
N-1	11118	-29	+11	32	48	1		11119	-18	-5	18	12	1
	(1)	(69)	(-2)		145	2		11118	+45	+15	47	97	1
23,628	11118	-21	+11	25	121	1		11118	+45	+13	47	6	1
N-2	11118	-18	+10	23	36	1		(2)	(353)	(-1)		137	6
	(1)	(58)	(-2)		157	2	29,577	11120	+3	+4	6	12	2
24,803	11118	-3	+12	14	133	1	N-3	11120	+5	+5	7	6	2
N-1	11118	-1	+11	13	48	1		11118	+58	+16	61	97	1
	(1)	(42)	(-1)		181	2		(2)	(339)	(-1)		115	5
26,637	11118	+21	+12	24	121	1	30,616	11120	+19	+5	21	61	3
N-2							N-2	11120	+22	+5	23	48	2
	(1)	(18)	(-1)		121	1		11118	+73	+15	75	73	1
27,517	11118	+29	+12	32	36	2		(2)	(325)	(-1)		182	6
N-4	11118	+31	+14	35	97	1	31,561	11120	+31	+4	32	6	1
							M-4	11120	+35	+4	36	6	1
								(1)	(313)	(-1)		12	2

Mean for 29 days, $A=209$, $r=13.1$

OCT 15 1953